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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,679	01/31/2005	Yoshihisa Itoh	US01-04072PCT	1775

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EXAMINER

CHANG, AUDREY Y

ART UNIT PAPER NUMBER

2872

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.		Applicant(s)	
	10/522,679		ITOH ET AL.	
	Examiner		Art Unit	
	Audrey Y. Chang.		2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/4/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on November 27, 2006, which has been entered into the file.
- By this amendment, the applicant has canceled claims 1-11 and has newly added claims 12-14.
- Claims 12-14 remain pending in this application.
- The rejections to claims 1-11 under 35 USC 112, first paragraph, set forth in the previous Office Action are withdrawn in response to applicant's amendment.
- The objections of claims 1-11 set forth in the previous Office Action are withdrawn in response to applicant's amendment.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Richardson (PN. 6,081,912).**

Richardson teaches a *holographic memory system* that is comprises a conventional holographic data recording arrangement including a *recording medium*, a *spatial light modulator* (SLM, column 3, lines 58-60), for *modulating* a light beam with the *encoded data image pages that are interested to be recorded* and a *test signal* that to *produce an encoded signal beam*, (this spatial light modulator and the light beam, then together sever as the *signal light beam optical system*), and a *reference beam*, (implicated

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generated by a *reference light beam optical system*), such that the encoded signal beam and the reference intersect at the recording medium to create an *interference pattern* within the recording medium as a diffraction grating. The holographic memory system further comprises a *photodetector* (22, Figure 2), which includes standard *charged couple device* (CCD), serves to *receive the* reproduced light, including both the reproduced image page data and reproduced test signal from the grating when the recording medium is illuminated by the reference light to convert the received reproduced light into *electrical* signal, (i.e. standard function of a CCD detector). Richardson teaches that the holographic memory system further comprises an estimator (23, Figure 2), an interpolator (24), and profile generator (28) together serves as the *data processing part* for renormalizing or correcting the reproduced data page with respect to the reproduced *test data*, or demodulating the electrical signal to obtain corrected data page, (please see column 2, lines 20-34 and column 5, lines 43-67). The correction or the normalization is to correct the retrieved or reproduced *data page* from the *inconsistency* or *error* that may have been present in the storage medium. The correction and normalization is *determined* based on **comparing** the *intended and the initially encoded values to the retrieved test signal values* to allow data behavior within the area of the test signals of interest to be estimated, modeled and/or determined, (please see column 5, lines 56-67). It is implicitly true in order for the comparison to take place the intended or initially encoded values for the test signal has to be stored in some where and be available in order the comparison with respect to the reproduced test signal is possible. Also the **comparison implies** the *difference* between the intended or original values and the detected, reproduced values is inquired to carry out the normalization or correction process.

Richardson et al the inconsistency between the intended values and reproduced values of the test signals include the effects inherent in the holographic memory system, (please see column 1, lines 42-45, column 5, lines 43-55). Although it does not teach explicitly that it includes the recording errors in the system, such feature is either inherently included as in the "holographic memory system" or an obvious

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modification to one skilled in the art for the benefit of making the retrieved data image page frees from the inconsistency or error inherited in the recording system.

Richardson teaches that the image data page (30, Figure 3) includes areas for the test signals (TS1 to TS6)) this means the recording medium would also include area for these test signals, serving as the reference data area.

Although this reference does not teach explicitly that the recording medium comprises photosensitive material, however photosensitive material is the most standard recording material for recording hologram, such modification is therefore considered to be obvious to one skilled in the art. Since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

With regard to claim 13, Richardson does not teach explicitly that the test signal is used to discriminate a kind of the recording medium. However such modification is considered to be obvious since using the test signal as the identification mark is considered to be obvious to one skilled in the art for the benefit of allowing the recording medium or the image data page be properly identified.

3. **Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Snyder et al (PN. 6,064,586).**

Snyder et al teaches a holographic data storage and retrieve system that is comprised of a storage medium (70, Figures 6, column 4, lines 7-15) serves as the recording medium, a hologram recording and reproducing apparatus that is comprised of a signal light beam optical system, including a spatial light modulator (66, Figure 6) and a lens (63), for allowing a coherent signal light (60) be modulated in response to predetermined data to enter the recording medium, (the coherent light beam is generated by the laser 50), and a reference light beam optical system for allowing a coherent reference light beam (62)

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to enter the recording medium wherein the signal beam and the reference beam intersect and interfere with each other to create an interference pattern within the recording medium to produce a diffraction grating or fringes pattern therein. In the retrieving process, the reference beam (62, Figure 7, column 7, line 57 to column 8, line 7) is used to illuminate the recording medium to reproduce light from the grating and the reproduced light is detected by a detector (74), which could be a CCD, (please see column 7, lines 64-65), that implicitly will convert the detected reproduced light into electrical signals. Snyder et al further teaches to include a *computer* (52) serves as the *data processing part* is included to carry out data processing and calculation process to obtain the corrected image page data. Snyder et al teaches that the image page data (10, Figure 1) comprises *reference data* such as *calibration marks* (20) and *alignment marks* (28a and 28b, column 8, line 53 to column 9) which implicitly means that the these marks are also recorded in the recording medium so that the recording medium also includes *reference data area*. Snyder et al teaches explicitly that the ideal intensity pattern (function $g(x,y)$) of the *calibration mark* is used to compare with the *actual detected light intensity pattern* of the information pattern to find the *difference* or *correlation mapping* between the ideal and detected calibration marks to *compensate* the *distortion of the image page data* occurs during data storage and retrieval, (please see column 2, line 28 to column 3, line 5). The compensation process is considered to be the demodulation of the electrical signal to obtain the image page data.

This reference has met all the limitations of the claims. It however does not teach explicitly that the recording medium comprises photosensitive material, but photosensitive material is the most standard recording material for recording hologram, such modification is therefore considered to be obvious to one skilled in the art. Since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended used as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

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With regard to claim 13, Snyder et al does not teach explicitly that the test signal is used to discriminates a kind of the recoding medium. However such modification is considered to be obvious since using the test signal as the identification mark is considered to be obvious to one skilled in the art for the benefit of allowing the recording medium or the image data page be properly identified.

Response to Arguments

4. Applicant's arguments filed on November 27, 2006 have been fully considered but they are not persuasive. The newly submitted claims 12-14 have been fully considered and rejected for the reasons stated above. Applicant's arguments are mainly drawn to the newly added claims and they have been fully addressed in the paragraph above.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

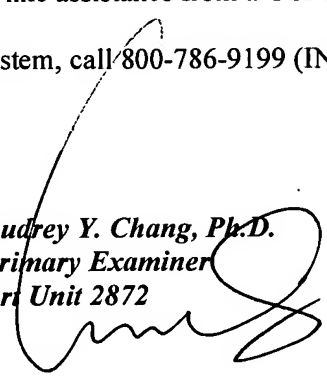
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Audrey Y. Chang, Ph.D.
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.